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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/732,243	12/07/2000	Steven James Frisken	U013097-8	9498
7590	11/03/2004		EXAMINER CURTIS, CRAIG	
Ladas & Parry 26 West 61st Street New York, NY 10023			ART UNIT	PAPER NUMBER
			2872	

DATE MAILED: 11/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/732,243	Applicant(s) FRISKEN ET AL.	
	Examiner Craig Curtis	Art Unit 2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 July 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 7-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 7-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
6) <input type="checkbox"/> Other: _____ |
|---|--|

DETAILED ACTION

Disposition of the Instant Application

- This Official Action is responsive to Applicants' Amendment filed on 30 July 2004.
- By their amendment, Applicants have amended claims 14-18 and have newly added claims 19-22, claim 6 having previously been canceled.
- Accordingly, claims 1-5 and 7-22 presently are pending in the instant application.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter that Applicants regard as their invention.

1. **Claims 1-3, 13, 19, and 21 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential element or elements, such omission amounting to a gap between the elements.** See MPEP § 2172.01. The omitted element or elements are those (whether plural or singular) that would, by virtue of their presence in the claimed device, account for said two rotated polarization component signals being combinable by way of said birefringent element following the rotation of said two orthogonal polarisation component signals by said polarisation rotating means. That is, absent the recitation of said omitted element or elements, it is unclear how said two polarisation rotated component signals are re-directed to said birefringent element--to be combined by same--after they have passed through said polarisation rotating means. Applicants could obviate this rejection by suitably amending each of independent claims 1, 13, 19, and 21, such that each include, for the sake of example,

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recitation, or recitations, of a limitation (or limitations) directed to a reflective element (or reflective elements), or to a reflective element (or reflective elements) *and* a lens (or lenses).

2. Claims 7-9, 11, and 12 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. *See* MPEP § 2172.01. The omitted steps are those (whether plural or singular) that would, by virtue of their recitation in claim 7, account for the fact that said two rotated polarization component signals can be combined utilising said birefringent element following the rotation of said two orthogonal polarisation component signals utilising said polarisation rotating means.

Claim Rejections - 35 USC 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-4, 7-11, and 13-22 are rejected under 35 U.S.C. 102(e) as being anticipated by Cao (6,236,506 B1).

Cao discloses the invention as claimed: [a]n optical device and method for producing a polarisation rotation of an optical signal, the device, arrived at via the implementation of said method, comprising:

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a single birefringent element (see, e.g., 309 in Figs. 3 & 4) for, in use, splitting the optical signal into two orthogonal polarisation component signals (See dashed and solid lines depicted within element 309);

a polarisation rotating means (*id.* @ 317) for, in use, rotating each polarisation component signal by a predetermined amount (see column 4, lines 21-25), and wherein the device is arranged in a manner such that, in use, the two rotated polarisation component signals are combined by way of said birefringent element for providing the predetermined polarisation rotated optical signal (see Figs. 3 & 4);

wherein said polarisation rotation is by 90 degrees (after two passes through said polarisation rotating means--i.e., through non-reciprocal rotator 317, which non-reciprocally rotates the polarization plane of light passing therethrough 45 degrees in the counter-clockwise (CCW) direction, regardless of transit direction);

wherein the polarisation rotating means comprises a nominally 45⁰ Faraday rotator and an optical circuit arranged in a manner such that, in use, the polarisation component signals are being transmitted [read: are being transmitted] twice through the nominally 45⁰ Faraday rotator (*id.*);

wherein the optical circuit comprises a lens and a reflective element (please see lens 313 and mirror 314 in Figs. 3 & 4);

Cao also teaches, with specific reference to **claims 13, 17, 18, and 22**, that the main application of said optical device disclosed therein is in bi-directional optical fiber communications (AKA *optical telecommunications*).

Cao also meets, with specific reference to **claims 14-18**, the relative displacement of said two orthogonal component signal limitations set out in these claims vis-à-vis the transmission of said two orthogonal polarization component signals transmitted, respectively, in a first and opposite direction. Applicants are apprised that their recitation in these claims as to said optical circuit comprising a single birefringent element is met by **Cao**, even though **Cao** admittedly discloses more than one birefringent element (e.g., 309, 311: the former having been taken as meeting the “a single birefringent element” limitation). In point of fact, the device, system, and implicit method teachings disclosed by **Cao** disclose several birefringent elements (including, in addition to elements 309 & 311, Faraday rotator 317), as does the device, system, and method teachings instant invention. This observation is presented for the sole purpose of putting Applicants on notice that their recitation of the limitation “wherein said optical device comprises an optical circuit comprising the single birefringent element, et cetera, (emphasis added)” does not preclude, as set forth in detail hereinbefore, the meeting of same by **Cao**.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cao (6,236,506 B1).

Cao discloses the claimed invention as set forth above **EXCEPT FOR** an explicit teaching wherein said method comprises (among others) a method step of coupling said optical

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signal into the device from an optical fibre, and coupling said rotated optical signal back to said optical fibre. **Cao**, however, does teach wherein the optical fibres associated with ports A&C and ports B & D are in very close proximity. See, e.g., the abutting relationship existing between same as depicted in Fig. 5. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the teachings of **Cao** such that said method further comprise a method step directed to coupling said rotated optical signal back to said optical fibre from whence it was coupled into said device, for at least the purpose of simplifying said method.

5. Claims 5 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cao (6,236,506 B1) in view of Kurata et al. (5,574,595).

With regard to these claims, Cao discloses the claimed invention as set forth above **EXCEPT FOR** an explicit teaching wherein said birefringent element comprises rutile.

Kurata et al., however, expressly disclose a teaching of birefringent elements comprised of rutile (see column 5, lines 19-23). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the teachings of **Cao** such that said birefringent element comprise rutile, for at least the purpose of allowing said invention to be realized via the use of well-known birefringent material(s), rutile being but one example of same.

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Response to Arguments

6. Applicants' arguments filed 30 July 2004 have been fully considered but are moot in light of the new grounds of rejection set forth hereinbefore.

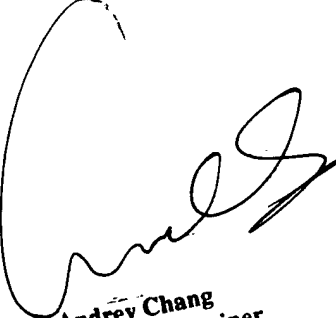
Contact Information

7. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Craig H. Curtis, whose telephone number is (571) 272-2311. The Examiner can normally be reached, Monday through Friday, from 9 a.m. to 6 p.m.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Drew A. Dunn, can be reached at (571) 272-2312. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

C.H.C.
Craig H. Curtis
Group Art Unit 2872
28 October 2004


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